

Summary of the ISDS and CDC Recommended ED Syndromic Surveillance

Elements: Core and Optional

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Currently, the PHIN Messaging Guide for Syndromic Surveillance specifies 33 Emergency Department (ED) data elements that are commonly used in public health syndromic surveillance. 32 of the elements were recommended by ISDS using a community consensus process. An additional, 33rd element (i.e., patient county) is crucial to federal use of these data during emergencies.

After careful consideration of the ISDS recommended elements, and further analyses performed by the CDC, we plan to go forward to ONC with:

1. 17 core elements to contemporary syndromic surveillance practice based on practice and current evidence:
 - a. 6 are essential to basic surveillance data management, quality control, and follow-up activities
 - b. 11 are essential to syndrome-based surveillance
2. 16 optional elements are either have less than a common usage but are not rare

Here is a cross-tabulation of the 33 specified SS ED data element usages by utility class.

Element Usage	Facility Identifier	Patient Demographics	Patient Health Indicators	Totals
Core Elements	3	8	6	17
Core (Administrative)	3	1	2	6
Core (Practice)	0	7	4	11
Optional Elements	5	4	7	16
Totals	8	12	13	33

Detailed Review of Elements

Core Set (Total of 17 Elements (6 Administrative + 11 SS Practice))

Administrative Elements

*** are elements that are necessary for basic data management and exchange in HL7

1. Facility Identifier (Treating), (Treating), ISDS Recommended Element# 1 ***
 - a. Unique facility identifier of facility where the patient originally presented (original provider of the data, National Provider Identifier or other number.
2. Facility / Visit Type (Treating), ISDS Recommended Element# 7

- a. [It is recommended that PHA constrain the transmitted data from the source using the patient class code set (example: only transmit records where Facility / Visit Type = ED, Emergency Department)]
3. Report Date/Time (Treating), ISDS Recommended Element# 8 ***
 - a. [If data flows through an intermediary or third party, the intermediary must keep the original date/time of transmission.]
4. Unique Patient Identifier, (Pt Dem), ISDS Recommended Element# 9 ***
 - a. [Examples of Unique Patient Identifiers are Patient Account number or a Master Patient Index (MPI) number. This data element may be used as the unique identifier used between the data sender and receiver to identify the record. The cardinality allows multiple identifiers to accommodate situations where a data provider sends multiple identifiers, such as patient MPI number in addition to patient account number. In addition, if the message goes through a data intermediary, such as an HIE, then multiple patient identifiers may exist. In such cases, it is important that all intermediaries retain and provide all associated patient identifiers for the patient.]
5. Unique Visiting ID, (Pt HI), ISDS Recommended Element# 20 ***
 - a. [A visit is defined as a discrete or unique face-to-face clinical encounter within a service department or location. This data element may be used as the unique identifier used between the data sender and receiver to identify the record.]
6. Diagnosis Type, (Pt HI), ISDS Recommended Element# 28
 - a. [Examples include, working diagnosis, final diagnosis]
 - b. Critical: Need to be able distinguish among the diagnosis types when the syndromic system is receiving messages in real-time.

SS Practice Elements

1. Age, (Pt Dem), ISDS Recommended Element# 11
2. Age units, (Pt Dem), ISDS Recommended Element# 12
3. Gender, (Pt Dem), ISDS Recommended Element# 13
4. Zip Code, (Pt Dem), ISDS Recommended Element# 15
5. County, (Pt Dem) , ISDS Recommended Element# 36
 - a. Unlike State of residence which can be deducted from patient's zip code, 30% of zip codes in the US cross county lines making it hard to deduct patient's residence county
6. Race, (Pt Dem), ISDS Recommended Element# 18
7. Ethnicity, (Pt Dem), ISDS Recommended Element# 19
 - a. Race and Ethnicity are required data elements because they are required elsewhere in Meaningful Use and these elements are essential for using ED data to understand disparities in health and health seeking behaviors.

- b. In 2011, of the current BioSense civilian facilities (n=665), 27% reported Race, and 27% reported Ethnicity.
- 8. Visit Date / Time, (Pt HI), ISDS Recommended Element# 21
- 9. Chief Complaint / Reason for visit, (Pt HI), ISDS Recommended Element# 24
- 10. Diagnosis / External Cause of Injury Code, (Pt HI), ISDS Recommended Element# 26
 - a. Diagnosis code or external cause of injury code (for injury-related visits) of patient condition. The first diagnosis code should be the principal diagnosis. When the first-listed diagnosis code (principal diagnosis) is an injury, one or more supplemental external-cause-of-injury codes or E-codes should also be provided.
 - b. E-codes provide useful information on the mechanism and intent of injury, place of occurrence, and activity at the time of injury.
- 11. Discharge Disposition, (Pt HI), ISDS Recommended Element# 29
 - a. In 2011, of the current BioSense civilian facilities (n=665), 36% reported Disposition.

Optional Set (Total of 16 Elements)

- 1. Facility Name (Treating), ISDS Recommended Element#2
- 2. Facility Location (Treating) Street Address, ISDS Recommended Element# 3
- 3. Facility Location (Treating) City, ISDS Recommended Element# 4
- 4. Facility Location (Treating) Country, ISDS Recommended Element# 5
- 5. Facility Location (Treating) State, ISDS Recommended Element# 6
- 6. Medical Record #, (Pt Dem), ISDS Recommended Element# 10
- 7. City/Town, (Pt Dem), ISDS Recommended Element# 14
- 8. State, (Pt Dem), ISDS Recommended Element# 16
- 9. Can be deduced from zip code
- 10. Country, (Pt Dem), ISDS Recommended Element# 17
 - a. Can be inferred from the other elements. Unclear benefit if it is a country other than U.S.
- 11. Date of onset, (Pt HI), ISDS Recommended Element# 22
 - a. Completion rate is low within BioSense historical data. Unused. Difficult to retrieve (note from EHRA). Could be captured with from the triage notes.
- 12. Patient Class, (Pt HI), ISDS Recommended Element# 23 ***
 - a. It is recommended that PHA constrain the transmitted data from the source using the patient class code set (example: only transmit records where patient class = E, Emergency)
- 13. Triage Notes, (Pt HI), ISDS Recommended Element# 25
- 14. Clinical Impression, (Pt HI), ISDS Recommended Element# 27
- 15. Disposition Date / Time, (Pt HI), ISDS Recommended Element# 30
 - a. Often missing
- 16. Initial Temperature, (Pt HI), ISDS Recommended Element# 31
 - a. Taha's study results (please see attached)--Conclusion: 0.14% (out of 17,000,000 encounters), having this element provides insignificant increase in sensitivity.
- 17. Initial Pulse Oximetry, (Pt HI), ISDS Recommended Element# 32

- a. In 2011, of the current BioSense civilian facilities (n=665), 0% reported Pulse Oximetry.

Please note that the guide also mentions some rarely used elements (such as Influenza laboratory orders and results, see guide version Tables 4.2.2 and 4.2.3) that we did not consider here. The purpose for including these in the guide was merely to provide vendors with a preview of data elements that more advanced or idiosyncratic systems use (e.g., NC Detect, Indiana State Health Department, and Washington State).

Stakeholder Comments on Provisional ISDS Recommendation:

Here is a list of stakeholders that have vetted the provisional and final recommended elements during the development of these elements and through open public periods.

Number of stakeholders that commented on the Provisional Recommendation

Which of the following best describes you in the context of the CMS EHR Incentive Program?	Frequency
Eligible healthcare professional or hospital	4
EHR technology vendor	9
Public Health stakeholder (e.g., public health official, epidemiologist, policymaker, etc.)	28
Other (please specify)	2
TOTAL	43

Commentator's organization - optional disclosures

STAKEHOLDER	ORGANIZATION NAME
Public Health stakeholder (e.g., public health official, epidemiologist, policymaker, etc.)	CA Dept. of Public Health
	Ohio Department of Health
	Washington State Department of Health
	Nebr. Dept. of Health and Human Services
	Oregon Health Authority
	Tarrant County Public Health
	Council of State and Territorial Epidemiologists (CSTE)
	CDC
	Office of Statistics and Programming, NCIPC, CDC
	CDC/CGH/DHAP
	CDC-NIOSH
	CGI Federal
	PHDSC
	CSTE
EHR technology vendor	McKesson
	General Electric Healthcare
	Allscripts
Hospital	Emory Healthcare
Other	Scientific Technologies Corp
	Electronic Health Record Association

Provisional comments from the stakeholders on the elements in support of our decision for the core and optional elements:

Country			
Response	Name	Organization:	Data Elements Comments
Pub Health	Linda Mattocks	CDC/CGH/DHAP	2. Suggested codes values are available for many of the data elements but not for County, Race and Ethnicity. Should a standard code set such as FIPS or census be referenced?

Date of onset

Response	Organization	Data Elements Comments
Pub Health	Washington State Department of Health	4.4, item 28 -- I don't know the feasibility, but if we could get it, it would be great!
Provider	K-P	Date of onset: Most EHRs have this information in narrative text blocks, which make it difficult to extract.

Disposition Date / Time			
Response	Name	Organization	Data Elements Comments
Pub Health			need to be optional. None of our hospitals give all this data and most do not have the capability to do so. Some of these data elements are unique identifiers which under the limited data set definition from HIPAA requires a data use agreement
Pub Health			(1) Split up the visit and disposition date and time fields, so that date and time are not lumped into a single field.
Pub Health		Forum posting	"From previous employment at a hospital on a floor (not ED), discharge time is usually a function of billing. Entry of this time for billing is not in real-time. If nurses notes are electronic, the last date-time entry may be a good substitute (especially if the narrative states, "discharged to home"). I think the underlying question is the status of the person (discharged home or admitted inpatient with something more serious) during an investigation or review of an anomaly. Duration of being a patient at an ED may have many factors, including staff on shift, day of week, severity of the illness, late seeking medical attention, etc."
Provider		K-P	Disposition Date/Time: It will be difficult to know what to put here, depending on which disposition is being referred to. Need further clarification. Also, it is not clear whether this is a coded entry in EHRs or a text note.

Initial Temperature			
Response	Organization:		Data Elements Comments
Pub Health			need to be optional. None of our hospitals give all this data and most do not have the capability to do so. Some of these data elements are unique identifiers which under the limited data set definition from HIPAA requires a data use agreement
EHR Vendor		GE Healthcare	I'm curious while temperature and pulse oximetry are RE, but other vital signs are not included. I'm not a public health specialist, I can imagine that blood pressure might not correspond to a public health problem, but I could imagine that pulse and respiration might. What's the significance of the signal conveyed by these data elements, and what is the significance criteria by which a data elements are chosen to be included in this data set. Hmm, there's some interesting math to do on this set... it strikes me that there's at least a good research paper in evaluating the predictive value of various data elements in the recommended set to public health surveillance.
EHR Vendor		McKesson	Vital Signs (Page 58 #26, #27) It is unclear why only the "vital sign" values of temperature and pulse oximetry are included while others are not. Vital sign information such as respiration rate may provide value in the classification of certain conditions. It would be useful if the reasons for inclusion (and possibly exclusion) of particular

observations, vital sign elements in this case, were included in this specification.

Initial Pulse Oximetry

Response	Organization:	Data Elements Comments
EHR Vendor	Allscripts	NULL
Pub Health		need to be optional. None of our hospitals give all this data and most do not have the capability to do so. Some of these data elements are unique identifiers which under the limited data set definition from HIPAA requires a data use agreement
EHR Vendor	GE Healthcare	I'm curious while temperature and pulse oximetry are RE, but other vital signs are not included. I'm not a public health specialist, I can imagine that blood pressure might not correspond to a public health problem, but I could imagine that pulse and respiration might. What's the significance of the signal conveyed by these data elements, and what is the significance criteria by which a data elements are chosen to be included in this data set. Hmm, there's some interesting math to do on this set... it strikes me that there's at least a good research paper in evaluating the predictive value of various data elements in the recommended set to public health surveillance.
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